

A redundantly modulated multicarrier protocol known as Carrier Interference Multiple Access (CIMA) is used in an optical-fiber network having wireless links at network nodes. CIMA is a protocol that can be used to create wireless protocols (such as TDMA and CDMA) having enhanced capacity and reduced system complexity. A CIMA optical-fiber network uses dispersion to enhance signal quality and facilitate switching. CIMA achieves both diversity benefits and capacity enhancements by providing redundancy in at least one diversity parameter while providing orthogonality in another diversity parameter. This basic operating principle of CIMA may be combined with multi-user detection to achieve frequency reuse and improved power efficiency. In the wireless link, diversity may be used to reduce the effects of small-scale fading on interferometry multiplexing.